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			APPLICANT: Arthur M. Krieg et al.	
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#### U.S. PATENT DOCUMENTS

Examiner's Initials #	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or Issue of Cited Document MM-DD-YYYY
		Number	Kind Code		
		5,527,899		Froehler	06-18-1996
		5,679,647		Carson et al.	10-21-1997
		5,929,226		Padmapriya et al.	07-27-1999
		6,031,086		Switzer	02-29-2000
		6,121,434		Peyman et al.	09-19-2000
		6,348,312	B1	Peyman et al.	02-19-2002
		6,426,334	B1	Agrawal et al.	07-30-2002
		6,476,000	B1	Agrawal et al.	11-05-2002
		6,498,148	B1	Raz	12-24-2002
		6,534,062	B1	Raz et al.	03-18-2003
		6,605,708	B1	Habus et al.	08-12-2003
		6,815,429	B2	Agrawal	11-09-2004
		6,977,245	B2	Klinman et al.	12-20-2005
		7,105,495	B2	Agrawal et al.	09-12-2006
		2002-0137714	A1	Kandamilla et al.	09-26-2002
		2003-0060440	A1	Klinman et al.	03-27-2003
		2003-0133988	A1	Fearon et al.	07-17-2003
		2003-0175731	A1	Fearon et al.	09-18-2003
		2003-0186912	A1	Agrawal	10-02-2003
		2004-0006034	A1	Raz et al.	01-08-2004
		2004-0058883	A1	Phillips et al.	03-25-2004
		2004-0092468	A1	Schwartz et al.	05-13-2004
		2004-0097719	A1	Agrawal et al.	05-20-2004
		2004-0132677	A1	Fearon et al.	07-08-2004
		2004-0136948	A1	Fearon et al.	07-15-2004
		2005-0130918	A1	Agrawal et al.	06-16-2005
		2006-0019909	A1	Agrawal et al.	01-26-2006
		2006-0074040	A1	Kandimalla et al.	04-06-2006
		2006-0211641	A1	Agrawal et al.	09-21-2006
		2006-0217328	A1	Kandimalla et al.	09-28-2006
		2006-0287261	A1	Agrawal et al.	12-21-2006

#### FOREIGN PATENT DOCUMENTS

Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/Country	Number	Kind Code			
		EP	0 468 520	A2	Mitsui Toatsu Chemicals, Inc.	01-29-1992	

Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			
	WO	98/11211	A2	Hybridon et al.		03-19-1998	
	WO	98/49288	A1	Hybridon Inc.		11-05-1998	

#### OTHER ART – NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		AGRAWAL et al., Pharmacokinetics of oligonucleotides. Ciba Found Symp. 1997;209:60-75; discussion 75-8.	
		AGRAWAL et al., Absorption, tissue distribution and in vivo stability in rats of a hybrid antisense oligonucleotide following oral administration. Biochem Pharmacol. 1995 Aug 8;50(4):571-6.	
		AGRAWAL et al., In vivo pharmacokinetics of phosphorothioate oligonucleotides containing contiguous guanosines. Antisense Nucleic Acid Drug Dev. 1997 Jun;7(3):245-9.	
		AGRAWAL et al., Antisense therapeutics: is it as simple as complementary base recognition? Mol Med Today. 2000 Feb;6(2):72-81.	
		AGRAWAL et al., Medicinal chemistry and therapeutic potential of CpG DNA. Trends Mol Med. 2002 Mar;8(3):114-21.	
		AGRAWAL et al., Pharmacokinetics of antisense oligonucleotides. Clin Pharmacokinet. 1995 Jan;28(1):7-16.	
		BALLAS et al., Induction of NK activity in murine and human cells by CpG motifs in oligodeoxynucleotides and bacterial DNA. J Immunol. 1996 Sep 1;157(5):1840-5.	
		BOGGS et al., Characterization and modulation of immune stimulation by modified oligonucleotides. Antisense Nucleic Acid Drug Dev. 1997 Oct;7(5):461-71.	
		BRANDA et al., Immune stimulation by an antisense oligomer complementary to the rev gene of HIV-1. Biochem Pharmacol. 1993 May 25;45(10):2037-43.	
		BROIDE et al., Modulation of asthmatic response by immunostimulatory DNA sequences. Springer Semin Immunopathol. 2000;22(1-2):117-24.	
		CHATURVEDI et al., Stabilization of triple-stranded oligonucleotide complexes: use of probes containing alternating phosphodiester and stereo-uniform cationic phosphoramidate linkages. Nucleic Acids Res. 1996 Jun 15;24(12):2318-23.	
		COHEN, Selective anti-gene therapy for cancer: principles and prospects. Tohoku J Exp Med. 1992 Oct;168(2):351-9.	
		COLEY Pharmaceutical Group, Press Release, January 22, 2007, Coley Pharmaceutical Group Updates Hepatitis C Drug Development Strategy	
		COLEY Pharmaceutical Group, Press Release, June 20, 2007, Coley Pharmaceutical Group Announces Pfizer's Discontinuation of Clinical Trials for PF-3512676 Combined with Cytotoxic Chemotherapy in Advanced Non Small Cell Lung Cancer	
		CROOKE et al., Phosphorothioate Oligonucleotides. Therapeut Apps. 1995;ch5:63-84.	
		CROOKE et al., Progress in antisense oligonucleotide therapeutics. Annu Rev Pharmacol Toxicol. 1996;36:107-29.	
		EQUILS et al., Toll-like receptor 2 (TLR2) and TLR9 signaling results in HIV-long terminal repeat trans-activation and HIV replication in HIV-1 transgenic mouse spleen cells: implications of simultaneous activation of TLRs on HIV replication. J Immunol. 2003 May 15;170(10):5159-64.	
		FIELDS et al., Fields' Virology. 2001;1:1153.	
		FILION et al., Development of immunomodulatory six base-length non-CpG motif oligonucleotides for cancer vaccination. Vaccine. 2004 Jun 23;22(19):2480-8.	
		HADDEN et al., Immunostimulants. Trends Pharmacol Sci. 1993 May;14(5):169-74.	
		HAHM et al., Efficacy of polyadenylic.polyuridylic acid in the treatment of chronic active hepatitis B. Int J Immunopharmacol. 1994 Mar;16(3):217-25.	
		HARTMANN et al., Delineation of a CpG phosphorothioate oligodeoxynucleotide for activating primate immune responses in vitro and in vivo. J Immunol. 2000 Feb 1;164(3):1617-24.	

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		HENRY et al., Chemically modified oligonucleotides exhibit decreased immune stimulation in mice. <i>J Pharmacol Exp Ther.</i> 2000 Feb;292(2):468-79.	
		HSIEH et al., Incorporation of CpG oligodeoxynucleotide fails to enhance the protective efficacy of a subunit vaccine against <i>Mycobacterium tuberculosis</i> . <i>Vaccine.</i> 2004 Jan 26;22(5-6):655-9.	
		HYBRIDON, Press Release, Hybridon Shows Immunomodulatory Activity of Synthetic Oligonucleotides. 2001 May 7	
		JAIN et al., CpG-oligodeoxynucleotides inhibit airway remodeling in a murine model of chronic asthma. <i>J Allergy Clin Immunol.</i> 2002 Dec;110(6):867-72.	
		JAIN et al., The promise of CpG DNA in the treatment of asthma. <i>Recent Res Develop Resp Crit Care Med.</i> 2002;2:7-18.	
		JIANG et al., Enhancing immunogenicity by CpG DNA. <i>Curr Opin Mol Ther.</i> 2003 Apr;5(2):180-5.	
		JURK et al., C-Class CpG ODN: sequence requirements and characterization of immunostimulatory activities on mRNA level. <i>Immunobiology.</i> 2004;209(1-2):141-54.	
		KANDIMALLA et al., Effect of chemical modifications of cytosine and guanine in a CpG-motif of oligonucleotides: structure-immunostimulatory activity relationships. <i>Bioorg Med Chem.</i> 2001 Mar;9(3):807-13.	
		KANDIMALLA et al., A dinucleotide motif in oligonucleotides shows potent immunomodulatory activity and overrides species-specific recognition observed with CpG motif. <i>Proc Natl Acad Sci U S A.</i> 2003 Nov 25;100(24):14303-8. Epub 2003 Nov 10.	
		KANDIMALLA et al., Towards optimal design of second-generation immunomodulatory oligonucleotides. <i>Curr Opin Mol Ther.</i> 2002 Apr;4(2):122-9.	
		KANDIMALLA et al., Divergent synthetic nucleotide motif recognition pattern: design and development of potent immunomodulatory oligodeoxyribonucleotide agents with distinct cytokine induction profiles. <i>Nucleic Acids Res.</i> 2003 May 1;31(9):2393-400.	
		KITAGAKI et al., Immunomodulatory effects of CpG oligodeoxynucleotides on established th2 responses. <i>Clin Diagn Lab Immunol.</i> 2002 Nov;9(6):1260-9.	
		KLINE et al., Modulation of airway inflammation by CpG oligodeoxynucleotides in a murine model of asthma. <i>J Immunol.</i> 1998 Mar 15;160(6):2555-9.	
		KLINE et al., Treatment of established asthma in a murine model using CpG oligodeoxynucleotides. <i>Am J Physiol Lung Cell Mol Physiol.</i> 2002 Jul;283(1):L170-9.	
		KLINE et al., DNA therapy for asthma. <i>Curr Opin Allergy Clin Immunol.</i> 2002 Feb;2(1):69-73.	
		KLINMAN et al., Immunotherapeutic applications of CpG-containing oligodeoxynucleotides. <i>Drug News Perspect.</i> 2000 Jun;13(5):289-96.	
		KLINMAN et al., CpG motifs present in bacteria DNA rapidly induce lymphocytes to secrete interleukin 6, interleukin 12, and interferon gamma. <i>Proc Natl Acad Sci U S A.</i> 1996 Apr 2;93(7):2879-83.	
		KNIPE et al., eds., <i>Fields' Virology.</i> 2001;1:1004-16.	
		KRIEG et al., Lymphocyte activation mediated by oligodeoxynucleotides or DNA containing novel un-methylated CpG motifs. American College of Rheumatology 58 <sup>th</sup> National Scientific Meeting. Minneapolis, Minnesota, October 22, 1994. Abstracts. <i>Arthritis Rheum.</i> 1994 Sep;37(9 Suppl).	
		KRIEG et al., Causing a commotion in the blood: immunotherapy progresses from bacteria to bacterial DNA. <i>Immunol Today.</i> 2000 Oct;21(10):521-6.	
		KRIEG et al., P-chirality-dependent immune activation by phosphorothioate CpG oligodeoxynucleotides. <i>Oligonucleotides.</i> 2003;13(6):491-9.	
		KRIEG, Immune effects and mechanisms of action of CpG motifs. <i>Vaccine.</i> 2001 Nov 8;19(6):618-22.	
		KRIEG et al., Chapter 17: Immune stimulation by oligonucleotides. in <i>Antisense Drug Tech.</i> 2001;1394:471-515.	
		KRIEG, The role of CpG motifs in innate immunity. <i>Curr Opin Immunol.</i> 2000 Feb;12(1):35-43.	
		KRIEG et al., Sequence motifs in adenoviral DNA block immune activation by stimulatory CpG motifs. <i>Proc Natl Acad Sci U S A.</i> 1998 Oct 13;95(21):12631-6.	
		KRIEG, Therapeutic potential of Toll-like receptor 9 activation. <i>Nat Rev Drug Discov.</i> 2006 Jun;5(6):471-84.	

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		KRIEG et al., Induction of systemic TH1-like innate immunity in normal volunteers following subcutaneous but not intravenous administration of CPG 7909, a synthetic B-class CpG oligodeoxynucleotide TLR9 agonist. <i>J Immunother.</i> 2004 Nov-Dec;27(6):460-71.	
		KURAMOTO et al., Induction of T-cell-mediated immunity against MethA fibrosarcoma by intratumoral injections of a bacillus Calmette-Guerin nucleic acid fraction. <i>Cancer Immunol Immunother.</i> 1992;34(5):283-8.	
		LEE et al., An oligonucleotide blocks interferon-gamma signal transduction. <i>Transplantation.</i> 1996 Nov 15;62(9):1297-301.	
		LEE et al., CpG motif in synthetic ODN primes respiratory burst of olive flounder <i>Paralichthys olivaceus</i> phagocytes and enhances protection against <i>Edwardsiella tarda</i> . <i>Dis Aquat Organ.</i> 2003 Aug 15;56(1):43-8.	
		MACKELLAR et al., Synthesis and physical properties of anti-HIV antisense oligonucleotides bearing terminal lipophilic groups. <i>Nucleic Acids Res.</i> 1992 Jul 11;20(13):3411-7.	
		MUTWIRI et al., Strategies for enhancing the immunostimulatory effects of CpG oligodeoxynucleotides. <i>J Control Release.</i> 2004 May 31;97(1):1-17.	
		PARRONCHI et al., Phosphorothioate oligodeoxynucleotides promote the in vitro development of human allergen-specific CD4+ T cells into Th1 effectors. <i>J Immunol.</i> 1999 Dec 1;163(11):5946-53.	
		PAUL et al., Technology evaluation: CpG-7909, Coley. <i>Curr Opin Mol Ther.</i> 2003 Oct;5(5):553-9.	
		PAVLICK et al., Novel therapeutic agents under investigation for malignant melanoma. <i>Expert Opin Investig Drugs.</i> 2003 Sep;12(9):1545-58.	
		PISETSKY et al., Influence of backbone chemistry on immune activation by synthetic oligonucleotides. <i>Biochem Pharmacol.</i> 1999 Dec 15;58(12):1981-8.	
		PISETSKY, The influence of base sequence on the immunostimulatory properties of DNA. <i>Immunol Res.</i> 1999;19(1):35-46.	
		RANKIN et al., CpG motif identification for veterinary and laboratory species demonstrates that sequence recognition is highly conserved. <i>Antisense Nucleic Acid Drug Dev.</i> 2001 Oct;11(5):333-40.	
		ROTHENFUSSER et al., Recent advances in immunostimulatory CpG oligonucleotides. <i>Curr Opin Mol Ther.</i> 2003 Apr;5(2):98-106.	
		SATO et al., Immunostimulatory DNA sequences necessary for effective intradermal gene immunization. <i>Science.</i> 1996 Jul 19;273(5273):352-4.	
		SATOH et al., The study of mechanisms in CpG oligodeoxynucleotides-induced aggravation in murine allergic contact dermatitis to 2,4-dinitrofluorobenzene. <i>Fukushima Igaku Zasshi.</i> 2002;52(3):237-50. Abstract only.	
		SESTER et al., Phosphorothioate backbone modification modulates macrophage activation by CpG DNA. <i>J Immunol.</i> 2000 Oct 15;165(8):4165-73.	
		STEIN et al., Problems in interpretation of data derived from in vitro and in vivo use of antisense oligodeoxynucleotides. <i>Antisense Res Dev.</i> 1994 Summer;4(2):67-9.	
		STEIN et al., Physicochemical properties of phosphorothioate oligodeoxynucleotides. <i>Nucleic Acids Res.</i> 1988 Apr 25;16(8):3209-21.	
		STEIN et al., Non-antisense effects of oligodeoxynucleotides. <i>Antisense Technology.</i> 1997; ch11: 241-64.	
		STEIN et al., Antisense oligonucleotides as therapeutic agents—is the bullet really magical? <i>Science.</i> 1993 Aug 20;261(5124):1004-12.	
		THREADGILL et al., Mitogenic synthetic polynucleotides suppress the antibody response to a bacterial polysaccharide. <i>Vaccine.</i> 1998 Jan;16(1):76-82.	
		TOKUNAGA et al., A synthetic single-stranded DNA, poly(dG,dC), induces interferon-alpha/beta and -gamma, augments natural killer activity, and suppresses tumor growth. <i>Jpn J Cancer Res.</i> 1988 Jun;79(6):682-6.	
		VAN UDEN et al., Immunostimulatory DNA and applications to allergic disease. <i>J Allergy Clin Immunol.</i> 1999 Nov;104(5):902-10.	
		VOLLMER et al., Characterization of three CpG oligodeoxynucleotide classes with distinct immunostimulatory activities. <i>Eur J Immunol.</i> 2004 Jan;34(1):251-62.	
		VOLLMER et al., Modulation of CpG oligodeoxynucleotide-mediated immune stimulation by locked nucleic acid (LNA). <i>Oligonucleotides.</i> 2004 Spring;14(1):23-31.	

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		YAMAMOTO et al., Lipofection of synthetic oligodeoxyribonucleotide having a palindromic sequence of AACGTT to murine splenocytes enhances interferon production and natural killer activity. <i>Microbiol Immunol.</i> 1994;38(10):831-6.	
		YAMAMOTO et al., Ability of oligonucleotides with certain palindromes to induce interferon production and augment natural killer cell activity is associated with their base length. <i>Antisense Res Dev.</i> 1994 Summer;4(2):119-22.	
		YAMAMOTO et al., Oligodeoxyribonucleotides with 5'-ACGT-3' or 5'-TCGA-3' sequence induce production of interferons. <i>Curr Top Microbiol Immunol.</i> 2000;247:23-39.	
		YU et al., Accessible 5'-end of CpG-containing phosphorothioate oligodeoxynucleotides is essential for immunostimulatory activity. <i>Bioorg Med Chem Lett.</i> 2000 Dec 4;10(23):2585-8.	
		YU et al., Modulation of immunostimulatory activity of CpG oligonucleotides by site-specific deletion of nucleobases. <i>Bioorg Med Chem Lett.</i> 2001 Sep 3;11(17):2263-7.	
		ZHAO et al., Pattern and kinetics of cytokine production following administration of phosphorothioate oligonucleotides in mice. <i>Antisense Nucleic Acid Drug Dev.</i> 1997 Oct;7(5):495-502.	
		ZHAO et al., Immunostimulatory activity of CpG containing phosphorothioate oligodeoxynucleotide is modulated by modification of a single deoxynucleoside. <i>Bioorg Med Chem Lett.</i> 2000 May 15;10(10):1051-4. Abstract Only.	
		ZHU et al., Modulation of ovalbumin-induced Th2 responses by second-generation immunomodulatory oligonucleotides in mice. <i>Int Immunopharmacol.</i> 2004 Jul;4(7):851-62.	
		ZIMMERMANN et al., Immunostimulatory DNA as adjuvant: efficacy of phosphodiester CpG oligonucleotides is enhanced by 3' sequence modifications. <i>Vaccine.</i> 2003 Feb 14;21(9-10):990-5.	

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